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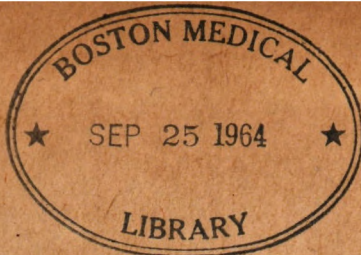


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Smith.  
Relation of Climate  
to Tuberculosis.

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TREASURY DEPARTMENT

Public Health and Marine-Hospital Service of the United States

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PUBLIC HEALTH BULLETIN No. 35

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THE RELATION OF CLIMATE TO THE  
TREATMENT OF PULMONARY  
TUBERCULOSIS

BY

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F. C. SMITH

*Passed Assistant Surgeon*

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PREPARED BY DIRECTION OF THE SURGEON-GENERAL



WASHINGTON

GOVERNMENT PRINTING OFFICE

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May 6, 1910  
V. L. W. J. B. B. B. B.  
J. J. J.  
J. E. F. C. R.  
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## THE RELATION OF CLIMATE TO THE TREATMENT OF PULMONARY TUBERCULOSIS.

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By Passed Asst. Surg. F. C. SMITH.

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Tuberculous patients are sometimes puzzled by conflicting medical advice on the subject of climate in its relations to the treatment of their disease. It is not surprising that diverse opinions prevail. From very early times the cure of tuberculosis has been associated, more or less, with certain places, and, as Klebs says: "At one time or another, almost any combination of known atmospheric conditions was considered to constitute a climate which had protective or curative qualities for consumptives." The reason for this is found, of course, in the fact that pulmonary tuberculosis is a chronic disease, depending for arrest upon a large number of factors, many of which are independent of atmospheric conditions and common to all climates.

Another thing which has added to the confusion of ideas on the subject has been the search for "immune zones," regions where tuberculosis is rare or absent, the inference being implied that such places offer climatic conditions useful in treating the disease. No region, however, has long continued free from tuberculosis after being reached by modern civilization. Remote districts became infected rapidly as soon as the disease was introduced. Thinly populated areas, whatever their geographical position, become tubercularized wherever cities are built and confining trades established. Latham states that tuberculosis is rife amongst the watchmakers of the high Alps. The death rate from tuberculosis among our native Indians is not appreciably less in those tribes which have always lived in the arid Southwest and other favorable climates. Neither the salts in sea air, the ozone of forests, nor the rarefied atmosphere of mountains are remedial in themselves; they simply typify an outdoor life. Physicians are practically agreed that there is no specific climate for tuberculosis.

But, beyond all question, an open-air life is more pleasant in some climates than in others, and an open-air life in varying degrees of rest and activity is one of several important elements in the

proper treatment of tuberculosis. The gain in comfort and thoroughness with which an outdoor existence can be followed in selected climates and the relation of certain complications to special atmospheric conditions must be considered against a possible loss in the facilities with which other essential therapeutic measures will be carried out.

The following expressions are representative of recent medical opinion.

Dr. E. R. Baldwin, Saranac Lake:

Change of climate is often of great value, but is not a necessary thing in all cases. It is largely dependent upon the means of the patient and also upon the environment at home. A change to a higher altitude and a more invigorating atmosphere is nearly always advantageous where the means are sufficient and proper supervision can be obtained. Experience shows that a minimum of \$10 a week is required for the expenses of patients in most of the health resorts, unless they can enter a semicharitable sanatorium. Hence it is inadvisable for patients who are unable to command the above sum to leave home.

Hillier, of London:

Climates of every variety have at one time and another been recommended for consumption: High altitudes and the seaboard, warm climates and cold ones, the ocean and the desert, the equator and the poles. The underlying truth is at last being recognized. The chief virtue of these resorts is the open-air life.

Dr. Lawrence Flick, Henry Phipps Institute, Philadelphia:

Expert medical advice is the most important factor in effecting a cure, and doctors at home are now as well up on the disease as doctors at climatic resorts, though formerly this was not so. A long period of treatment is required, no matter where undertaken, and proper treatment at a distant resort is prohibitive for the poor, and often embarrassing for the well to do. I desire to go on record as believing that there is no therapeutic value in climate.

Anders, of Philadelphia (Practice of Medicine, 1907):

Experience and observation have shown that certain climates, selected with particular reference not only to the stage of the affection, but more particularly to the individual, are useful modifying influences of the tissue soil. In any case of tuberculosis that climate is most suitable in which the patient "feels well, eats well, sleeps well, and gains flesh and strength." (Delafield.)

Latham, of London (Diagnosis and Modern Treatment of Pulmonary Consumption):

The results of sanatorium treatment in a variety of climates have shown that the old ideas of a particular climate or altitude being a specific for pulmonary consumption are erroneous, and have proved that climate is only one, though an important, factor in the treatment. Most physicians who have had much experience of sanatorium treatment, and who have watched patients for some years after their return from a sanatorium, agree that as far as possible *all patients should be treated under the same climatic conditions as those which they are likely to experience in their subsequent life.* (Italics are Latham's.)



Minor, of Asheville, N. C., in an article for popular use:

If you have money enough to go away to a favorable climate and get there good board, care, and accommodations, it will be a great help to you; but *change of climate is not the first or most important thing*, and, unless you have money enough to get in the climatic resort as good or better conditions than you have at home, you had much better stay at home and spend what money you have in getting the best possible conditions you can there. (*Italics are Minor's.*)

Walsh, of Philadelphia:

If a case of consumption can not be cured in its home climate, it can not be cured anywhere.

Osler (Practice of Medicine, 1907):

(c) *Climatic treatment.*—This, after all, is only a modification of the open-air method. The first question to be decided is whether the patient is fit to be sent from home. In many instances it is a positive hardship. A patient with well-marked cavities, hectic fever, night sweats, and emaciation is much better at home, and the physician should not be too much influenced by the importunities of the sick man or his friends.

\* \* \* \* \*

Very much is said concerning the choice of locality in the different stages of pulmonary tuberculosis, but when the disease is limited to an apex, in a man of fairly good personal and family history, the chances are that he may fight a winning battle if he lives out of doors in any climate, whether high, dry, and cold or low, moist and warm.

Dunham, 1904, after visiting discharged Massachusetts Sanatorium patients in the West, and upon comparing Massachusetts Sanatorium statistics with those of the United States Army Sanatorium at Fort Bayard, New Mex.:

The results corroborate our belief in the efficacy of residence in dry climates, but with a smaller margin in its favor than was anticipated. \* \* \*

The proportion of people adapted for treatment in these extremes of climate must be more nearly equal than thought possible by climatologists generally. That is to say, a small majority of the patients at Rutland would probably do better at Fort Bayard and a large minority there might do better here.

Francine, of Philadelphia (Pulmonary Tuberculosis, 1907):

At first and for a considerable time mountainous regions or high altitudes were considered essential sites for sanatoria, as the potency of climate per se was exaggerated or at least not rightly understood. Nor can this question be considered settled even to-day, though it seems probable that the importance of the other factors in sanatorium treatment, i. e., rest, fresh air, diet, and regular regimen, are receiving juster appreciation than heretofore. The feeling seems to be gaining ground in the profession that it is not so much a particular climate which accomplishes results as it is fresh air, and plenty of it, in association with the other factors of modern treatment. \* \* \* The view is held by some with wide experience to substantiate their claims that change of climate is unnecessary and even unadvisable and that quite as good results may be obtained by treating the patient in his own home; these latter enthusiasts have swung completely over, and disregard climate while emphasizing the importance of care and treatment. It seems probable that the just view lies somewhere midway between these two extremes.

### Bonney, of Denver:

The prevailing tendency to provide home sanatoria for all classes and repudiate established facts of climatic influence is to be deplored. Climate is a valuable adjuvant to other measures of therapeutic management, but the same watchful observation by an expert physician is necessary for good results. Choice of a climate is a delicate and important matter. In all cases climatic selection becomes for the patient a question of individual fitness. The last 313 cases coming under my personal observation in Denver included 90 of doubtful diagnosis and 125 others unsuitable for the change of climate on account of the complications or advanced and rapidly progressing disease.

### Pottenger, of Monrovia, Cal.:

Given the same treatment, climate is valuable. Patients of small means should remain at home under intelligent guidance instead of stinting themselves in a better climate. Favorable climate is not essential, but it makes the cure easier, and at the same time favors it.

### Bowditch, V. Y., of Boston:

\* \* \* Equally foolish to say that it is no longer necessary to send patients to a distant clime or that every patient must go far away to regain health.

### Knight, of Boston (deceased):

Undoubtedly there is something in climate influences. Am sure there can be no contention as to the advantages of certain forms of climatic treatment in connection with other methods of personal hygiene.

### Knopf, of New York:

The value of certain climatic regions in the treatment of pulmonary tuberculosis, particularly of high and dry climatic resorts, must be acknowledged. A change of climate is nearly always good, except in the very latter stages of the disease, when it should only be made in case of a well-to-do patient and upon his expressed desire. Even a change from a good to a seemingly less favorable climate may accomplish a certain amount of good. The danger of relapse is greater to those returning from distant resorts after a short sojourn, before they have become thoroughly acclimated or their disease cured or arrested. Suitable and beneficial differences are not infrequently found in climates very near home. Thus, for example, a removal from New York slums to North Brother Island, within the city limits, constitutes a climatic change beneficent to the majority of indigent cases.

In the selection of climate for a tuberculous patient, his likes or dislikes for warm or cold weather, or his possible idiosyncrasies for high or low altitude, and the presence of chronic dry or moist nasal catarrhs must be taken in consideration, those with dry catarrhs usually doing better in relatively moist regions and vice versa. The majority of tuberculous patients (particularly those coming from the laboring classes) should, if at all possible, be treated in climates where they will have to live and labor after their restoration to health.

### THE IMPORTANCE OF CLIMATE COMPARED WITH THAT OF OTHER THERAPEUTIC MEASURES.

The most important factors in promoting recovery from pulmonary tuberculosis are:

1. *Adequate and intelligent rest,*

2. *Proper and sufficient food,*

3. *Abundance of pure air,*

all under the direction of skilled medical service, constituting a well-ordered hygiene. It would be difficult to name the relative values of these factors. No one of them is essential in all cases, for recoveries occur under very unhygienic conditions. Various pathologists estimate that 50 per cent, or even more, of infected people recover without knowing that they have had a serious disease. But for those who come to a doctor and in whom the disease is discovered, such spontaneous recoveries must be ignored, and rest, food, and air prescribed according to the patient's financial condition.

Obviously all are not equally able to afford these things. Comparatively few of those suffering from tuberculosis can realize ideal conditions for recovery. A limited purse can procure rest for a limited time, or in inadequate degree, and fresh air is often expensive just as is choice food. Fresh air is expensive in the city, because it means proper housing in a good location. How much that costs in a city like New York, for instance, is readily understood. Removal from the city entails an initial expense, with, perhaps, business sacrifices for the earning member of the family. Additional clothing required to protect the body from cold adds to the expense of fresh air. Just as the circumstances of a patient may prevent him from securing the best house or the best food, so he may not be able to get the best fresh air, i. e., the best climate. If we grant that there are differences in climates, just as there are differences in houses, still, excellence of climate is no more essential to a cure than excellence of some other things, and there is no climate so good that it will always make up for increased work or poorer housing, or scantier fare, if necessitated by a change.

Each case should be decided on its own merits, and where sacrifices must be made they should be duly apportioned, both in regard to the immediate and also the remote aspects of the case. For one with fever, sweats, and rapid wasting, absolute rest in bed, with good ventilation and good nursing, is an immediate necessity, outweighing other considerations. On the other hand, unfavorable climatic conditions, such as oppressive heat, irritating dust or smoke, extreme cold, or an atmosphere of melting snow and constant fog may exercise such a bad effect on a case fit to travel that a suitable change of climate becomes an urgent necessity and should be undertaken, even at considerable sacrifice.

The wealthy, who are able to surround themselves with comforts and can command expert service wherever they go, may seek a change whenever it is indicated, weighing only the ill effects of a journey against the natural advantages of the place selected. Besides the wealthy, there is a class following occupations which allow a transfer



from one region to another with little sacrifice of means. Railroad employees in certain capacities, telegraph operators, etc., and government employees in some departments, are often able, by the courtesy of their superiors, to effect a transfer of their duties to a climate more favorable to themselves or to a tuberculous member of their family. The three great medical services of the Federal Government, the Public Health and Marine-Hospital Service and the medical departments of the army and navy, have selected for their respective sanatoria locations in the arid Southwest, in what was adjudged the most suitable climate for young, adult males. But in locating state and municipal sanatoria the governing boards have in each instance chosen a site within their own domain; economic considerations, accessibility, and opportunities for administrative control outweighing any increased therapeutic value a distant climate might have afforded. The majority of patients will be in the same relation to their families that the public sanatorium bears to its State and the same economic principles will usually apply to the disposition of the case.

#### PRELIMINARY OBSERVATION AND STUDY OF CASE BEFORE ADVISING CHANGE OF CLIMATE.

As a routine procedure, the practice of advising a change of climate to a distance is unwarranted. The consensus of opinion is that certain changes are desirable in certain cases, but precipitate haste in ordering a patient away is a mistake. Sometimes a change is either unnecessary or useless, and moreover, a climate adapted to the needs of one individual may be wholly unsuited to those of another.

The doctor who habitually prescribes a distant removal is usually one who still harbors the idea that there is a specific climate for tuberculosis. Such a physician is an exponent of some particular region, from fashion or caprice or from lack of knowledge of other places. The old adage "Consumption, therefore, creosote or Colorado" is equally expressive of therapeutic and climatic ignorance. The reproach so frequently heard from resort specialists that patients are not sent early enough, that the family doctor holds them too long, has probably done more harm than good. The case that should be sent to a distant climate immediately upon diagnosis is exceptional, nor should neglect to make an early diagnosis stand sponsor for precipitate haste in sending the victim away when it is finally established. At the Marine-Hospital Sanatorium, Fort Stanton, N. Mex., the results have been nearly three times as good in the cases which left the home stations, i. e., the local marine hospitals, without fever, as in those who had a temperature of 38 degrees or more within two weeks of departure. The deaths in those leaving afebrile were to those leaving with fever, as 22 to 59, the arrests as 19 to 7½, the ap-

parent cures as 10 to 3. (Nomenclature of the National Association in use at this station.) A period of observation is frequently desirable in order to exclude hopeless cases, and that an intelligent selection of climate may be made if a change is needed, the character of each case offering its individual indications.

But there should be no delay in instituting the regimen upon which a cure will depend, no matter where undertaken, whether a removal is contemplated and whether the time set for departure is near or remote.

#### HOPELESS CASES NOT TO BE SENT TO A DISTANCE.

It is not always easy to determine when a case of pulmonary tuberculosis is hopeless, but in general the far advanced case that does not offer some hope of temporary arrest in the home climate, when treated in a local sanatorium, or under other favorable conditions, can not be expected to improve under the same conditions after a long journey, no matter what the difference in climate. A progressing case of long standing, with abdominal organs already damaged by terminal changes of the disease, and dependent on nursing for comfort, is in no condition to be benefited by a change of climate. Occasionally a critical case recovers or life is prolonged beyond all expectation in a health resort, but the same thing occurs in similar cases in home climates. In the elevated western regions, so frequently selected, a patient grows worse faster or improves faster, as the case may be, than in less stimulating climates. At the Marine-Hospital Sanatorium, Fort Stanton, N. Mex., there were 84 deaths within one month of arrival, and 203 in from one to six months after arrival, out of a total of 524 deaths. It makes little difference to a dying man what the climatic conditions are so long as he has proper care. A few hours of extra sunshine per day or a decreased amount of precipitation have not the same value to a moribund case that they have to one less ill. Unfortunately, the evil results of exiling the hopeless cases are not so apparent to those responsible for it as to those among whom the unhappy sufferers go, for there is no picture more miserable than the boarding-house life of a consumptive, hopelessly ill among strangers. An inquiry made by the National Association for the Study and Prevention of Tuberculosis has convinced its executive office that over 7,000 hopelessly ill consumptives are annually sent to the States of California, Arizona, New Mexico, Texas, and Colorado, and that of these over 4,000 are practically indigent.

#### THE PSYCHOLOGICAL MOMENT FOR CHANGE.

Almost any case of tuberculosis which may be expected to result favorably, as well as many hopeless cases, will, when kept in bed in

freely flowing air anywhere, improve for a time and up to a certain point.

As a rule, indeed, routinely, it is best to carry the patient as far along the road to health as seems possible (within certain limits) by treatment at home, at least to relieve all symptoms so far as may be, before contemplating a change. After comparative quiescence of the lung process has been reached under treatment at home, and the nutrition is much improved, there comes a stage where further improvement is slow. This is the psychological moment for change. In speaking of change I mean a complete change to health resorts in the far West; or those in the East at considerable distance from the patient's home. (Francine.)

It can not be too frequently repeated that each case must be decided individually. A delicate, anemic woman who feels the cold keenly and can not be trained to face veranda life in the damp rigors of a New England winter, is so much benefited by a sojourn of three months in some southern winter resort where outdoor life can be comfortably followed that the advantages of the temporary change outweigh the pangs of homesickness. One with flagging digestion and relaxed nervous and vascular system, sweltering in the heat of a southern July, may find a removal to the sparkling air of some elevated western region or even to the invigorating atmosphere of a cool beach resort a life-saving measure.

#### GENERAL ASPECT OF THE INVASION.

The amount of lung tissue involved is by no means the only thing to be considered. Frequently the finding of tubercle bacilli in the sputum of a man coming to his physician with no serious symptoms causes the case to be referred to a specialist in diseases of the chest who elicits the history of an unrecognized attack of tuberculosis occurring several years previously, and finds, clinically, an arrested process. The pathological condition may correspond to that of a case just returned from a successful period of climatic treatment. Obviously, such a newly diagnosed case is not subject to the same rules as certain others. Again, the presence of a small area of active disease in one part of a lung, showing arrest in other parts, may put the case in the same class as an incipient attack. Or the presence of terminal changes, fatty kidney, amyloid liver, etc., from long standing tuberculosis, may put a case with even a slight degree of activity in the class with those hopelessly ill. Moreover, certain types are florid from their onset, the so-called pneumonic cases, as well as the miliary variety, and it is certain that the influence of climate is practically negligible in such acutely progressing disease. For certain complications, skillful treatment by an appropriate specialist is so important that all other considerations may be disregarded for the time and the most skillful service sought, regardless



of climate. In general it may be said that any complication which confines the patient to bed is best met where the best nursing facilities are to be found.

#### THE LOCAL SANATORIUM.

A preliminary observation for a few months in a local sanatorium is invaluable in determining the character of a recently diagnosed tuberculosis. The number of these institutions is increasing almost daily and within a few miles of any large city will be found charitable, semicharitable, and private fresh-air hospitals for any class of cases. Here an idea of the resistance of the individual and the indications to be met can be obtained. The habits of life which that consumptive must observe who will either live with or cure his disease in any climate are best learned in such an institution where the inmates are devoted to the business of getting well. There is, in a well-ordered sanatorium, an esprit de corps among the patients themselves, an intelligent, buoyant, helpful coopération not altogether unlike college spirit, and the special training afforded in a vital matter in such a place may well liken the sanatorium to a school, as, indeed, it is. North Carolina has recently changed the name of her state sanatorium to the State Training School for Tuberculosis.

The position of a specialist in diseases of the lungs is analogous to that of a surgeon, and for the best results the former should often be consulted just as, in another class of diseases, the latter would be. A surgeon, competent for ordinary emergencies, can be found in any, even the smaller cities, but while special training in pulmonary tuberculosis is rapidly developing and in a few years will be easily available in any part of the country, it has now often to be sought for in special places, and the sanatorium is one of these.

#### THE GENERAL PRACTITIONER'S POINT OF VIEW.

The family doctor, having made a skillful diagnosis, absolute or provisional, is immediately confronted with the question, what are the best opportunities for recovery which this patient's means will allow? For, as Edson says, "the best he can get is what we must order, both as regards food, bedroom, and quality of air." If the case is in a family of wealth, his task is simplified, as he has merely to decide whether a change of climate is necessary or justifiable and the nature of the change indicated, and may give his advice accordingly, knowing that adequate means will everywhere command skilled service, home comforts, solace, and diversion. In the vast majority of cases, however, he must weigh the benefits of a change against certain sacrifices usually necessary to effect it, and here must be considered

a multitude of details, some of which the family doctor is in a position to decide upon better than anyone else and some of which, without special training in tuberculosis, he will make a mistake in attempting to decide. Even when treatment in the home climate has been decided upon, there are some who insist that their patient enter a local sanatorium for several months for the preliminary training necessary to a successful regimen at home.

If the case has a favorable outlook and a good chance to recover in the home climate, the fact often remains that there would be a still better chance in some other climates. He desires to prescribe nothing short of the very best conditions. He recalls too, that a "change of climate" is time-honored advice, the patient expects it perhaps, and there will be less responsibility for an unfavorable outcome if he gives it. He may measure the vexations of home treatment against inadequate fees, and remember that he has even been accused of mercenary motives in holding certain favorable cases for home treatment. It must be confessed that it requires considerable courage for a physician to recommend "no change," and it can be said without equivocation that the family doctor who undertakes to treat a case of pulmonary tuberculosis in a home of any kind is guided by duty and altruism and not by the financial aspects of the case. The layman, always following medical teaching of a decade previous, is more ready to do "some great thing" than to bathe seven days and nights in the week in the out-door air of home. Indications for or against a removal are found in the home itself. A nervous man or woman may need to be taken from a turbulent household of lusty children, while for a differently constituted case congenial relatives are indispensable for content. Extreme measures are sometimes necessary to get a careless patient away from helpless associates, or, on the other hand, to save an invalid from false ideas of treatment at the hands of ignorant relatives.

Moreover a multitude of counsel confuses the busy practitioner. The resort specialists, each perhaps convinced of the excellence of a particular climate by a self-cure there, urge the merits of various regions. They insist that the case be sent without delay, fix two to five years as the probable duration of treatment, and perhaps raise a question at the same time against the propriety of an ultimate return to home climatic conditions. Moreover he has been convinced that hygiene and good medical attendance are as necessary in the new climate as the old, and that the claims of a sanatorium are as strong in a distant health resort as they are in the home city.

He can recall some sad experiences of previous days when his early cases went West to "rough it," or of later ones where patients thought that they could loiter in smoky lobbies and attend the evening dances and effect a cure simply because they were breathing the

pure air, or the rarefied air, or the dry air of some widely advertised "climate."

But it is often easier to persuade a patient to enter a sanatorium at a distant resort than a similar one near home, and sometimes an adult male can be persuaded to abandon his business pursuits only by radical removal from the scene of his activities. Especially is this true of physicians. The stimulation of hope afforded by a complete change is frequently needed where a patient has met repeated reverses in his own case or has seen unfavorable outcomes in a number of friends or relatives. With all this the family doctor must study the tastes and habits of his patient. The indications for change are different for a home-loving, carefully nurtured girl than for her bachelor brother. Young adults often welcome a change, whereas one past middle life, with strong attachment for home scenes, may consider it a hardship. For the very young or the very old a removal simply for change of scene would almost never be indicated.

Temperament and previous climatic environment are important. One would not, for instance, send a Norwegian youth to the Azores nor a Creole demoiselle to winter in the Adirondacks. A thin, irritable person, who shrinks at sudden drops in temperature, would not be advised to go to Colorado, nor would a full-blooded, lusty individual ordinarily be directed to San Diego.

In deciding whether a case of pulmonary tuberculosis should have a change of climate, temporary or permanent, remote or near, the doctor must not be bound by any rule, but be guided in each case by all the attending circumstances—by the patient's age, sex, and social condition, wealth, temperament and desires, by the stage and activity of the disease and its complications. He will be influenced by the home climate and the season of the year, but it is safe to say that no place is so unfavorably situated that a general recommendation for change can be made, and none so fortunate in its location as to preclude the possible advisability of a removal.

#### HOME CLIMATES.

Local weather conditions at certain seasons may strongly indicate a temporary removal from some localities. When crowds of well people press out of a hot city to the nearest cool resort the doctor may well cast about for similar relief for his consumptives. The most frequently indicated change is one to avoid excessive heat, for it is now realized that, making allowance for idiosyncrasy, cold air is especially stimulating to metabolism and, therefore, peculiarly suitable to the treatment of pulmonary tuberculosis. The tonic effects of cold air with increased appetite and power of assimilation account for much of the good results ascribed to the dryness and elevation of

Colorado. Most city dwellers know of some near-by country resort where comfort is increased during the summer months, and, with the consumptive, as with others, comfort is the chief motive for a change. There are few parts of the United States so situated as not to have within comparatively short distances places with climatic conditions so different as to constitute a marked change, and as J. C. Wilson has said, "It is sometimes not so much the climate to which the patient goes as the climate from which he is taken." The change from a hot city to a cool country place may be as radical as a removal from a suburban mansion to New Mexico plateaus.

Within a few hours' ride of any large city can be found comfortable resorts. The mountains of the Virginias and Pennsylvania are especially rich in places where, with proper medical attendance, favorable climatic conditions for consumptives are found. The climate of the Adirondacks is only representative of the wooded country of that latitude. Almost every State on the Canadian border has forests at moderate elevations where, with only occasional extremes of temperature, a stimulating atmosphere lends comfort to an outdoor life.

The Central Plateau of Massachusetts, described by Getchell, of Worcester, embraces 700 square miles and bears a score of small cities, all at an altitude of 1,000 feet or more. In one of these, Rutland, the state sanatorium is located, and from this place, as well as from Petersham and Templeton, Mount Greylock in the Berkshires, 60 miles away, can be plainly seen (Doctor Getchell estimates) as many as sixty days in the year. In view of the accessibility of this region and the excellent results obtained at the state institution, it is gratifying that numerous private sanatoria are being opened there.

Ulster, Greene, and Sullivan counties around New York city are frequently mentioned as containing many desirable locations for consumptives. Judd, of Philadelphia, describes a plateau 1,800 to 2,000 feet high in Monroe County, Pa., conveniently near several of the largest eastern cities, and, as is well known, there are hundreds of cool beach resorts from Maine to far south on the Atlantic seaboard. Asheville, N. C., well known as a health resort, is illustrative of the stimulating climate of the mountainous regions of North Carolina, Tennessee, and Kentucky.

Moreover, it should be remembered that there is no ideal all-the-year-round climate for the average consumptive. Physicians of Denver sometimes send patients out of that city into neighboring mountains during certain months of the year to avoid unfavorable weather conditions. Craig, of Phoenix, suggests that all-the-year health seekers in Arizona should spend summer in Flagstaff, fall in Prescott, and winter and spring in Phoenix. Climatic conditions vary greatly within short distances, not only in California and Colorado,

but also in many Eastern States, where mountains are found near the ocean.

There are certain advantages in undertaking the cure in one's own home climate, and by this term is usually meant places not more distant, for instance, than the confines of the home State. The limitations of one's own climate are known and will not be presumed upon, whereas the faith inspired by a removal to some specially selected climate often weakens the regimen which is necessary anywhere. Moreover, a return to home climatic conditions is more apt to show a lapse from the careful hygiene which was followed with comfort in a favorable spot but seems a hardship in more rigorous climes. As Hillier says, "The man who has braved wind and weather in an English or German sanatorium will more readily stay out of doors and open his windows when he gets back to every-day life at home than one who has just returned from the Mediterranean or the cape."

The short-distance change is admirably adapted to the needs of the average individual for whom a removal from business cares or unfavorable home surroundings is indicated. It is probable that the advantages of near-by resorts have not been fully realized by busy, general practitioners, and the therapeutic value of such changes has been lost sight of in radical removal to a distant climate. But climatic therapeutics are not exact. Indeed, as Anderson, of Colorado Springs, has said, "The matter of climate is largely one of experiment." A short-distance change is obviously a less costly experiment than a long-distance change.

The following list, perhaps incomplete, showing location of various state sanatoria is added, because, when intelligently selected, such sites are representative of the healthful regions of a State. The superintendent of such a public institution is also in a position to know the location of private sanatoria in his neighborhood, and is more or less in the habit of answering inquiries concerning the tuberculosis situation in his own State.

Arkansas: Boonesville (not completed).	Michigan: Howell.
Delaware: In the Brandywine Hills near Wilmington.	Minnesota: Walker.
Georgia: Alto (not yet built).	Missouri: Mount Vernon.
Indiana: Three miles east of Rockville.	New Hampshire: Glenclyffe.
Iowa: Five miles northeast of Iowa City.	New Jersey: Glen Gardner.
Louisiana: Covington.	New York: Ray Brook.
Maine: Hebron.	North Carolina: Montrose.
Maryland: Sabillasville, Towson, and Mount Airy.	Ohio: Mount Vernon.
Massachusetts: Rutland and North Reading.	Pennsylvania: Mount Alto and Cresson.
	Rhode Island: Pascoag.
	South Dakota: Custer (not yet built).
	Vermont: Pittsford.
	Wisconsin: Wales.

## SPECIAL CLIMATES.

The practice of sending consumptives away to high altitudes is fraught with greater possibilities for good or for evil than any other change commonly made. Such places in the United States are dry, cool, and stimulating, with a large number of clear days and a maximum of sunshine. Concerning the therapeutic effects of diminished air pressure itself authorities differ, some holding it to be indifferent, others assigning it a positive value in dilating the air vesicles and increasing pulmonary circulation. Still others, while granting that many cases are benefited by such climates, believe that a rarefied atmosphere may be harmful in so far as the deeper breathing required is opposed to pulmonary rest and assists in breaking down existing consolidation. All agree that there is a large number of contraindications to high altitudes, and the following is a list of those for whom such a change is usually considered unadvisable: Those of low vitality and with poor circulation; the old or middle aged with declining powers of heat production; the erythric, neurotic individuals, or those with irritable temperaments; all with acutely progressing disease or those who can not attain even a temporary arrest in the home climate; very far advanced cases with much destruction of lung tissue, resulting in dyspnoea (fibroid type included); those with dilatation or nervous derangement of the heart and certain forms of uncompensated valvular disease; and cases complicated with diabetes, nephritis, emphysema, dry catarrh, or much bronchial irritability. For young adults without any of the foregoing complications who can and will secure proper medical attendance and submit to the same regimen that is necessary to effect a cure anywhere, the high, dry climate is the best. It has its dangers, one of which is the sense of well-being which may betray one into pernicious activity. It will frequently revive a jaded appetite or mitigate a troublesome moist catarrh at once, and it will add zest to life, but it will not insure recovery in every case and is not a short cut to health. Of the first 1,754 patients admitted to the Marine Hospital Sanatorium at Fort Stanton, N. Mex., 524 have died there, but a large number of these would not, in the light of present knowledge, be considered suitable cases for transfer, and it may be added that in the interest of the public health it is the policy of this institution to encourage hopeless cases to remain, unless the interests of the individual are best served by returning him to lower altitudes.

The following list of places with altitudes between 4,000 and 7,000 feet is believed to represent fairly well the high, dry climate, but is of course only suggestive of locations to be sought:

In Arizona, Flagstaff, Oracle, and Prescott;<sup>a</sup> in Colorado, Boulder,<sup>a</sup> Brush,<sup>a</sup> Canon City,<sup>a</sup> Colorado Springs,<sup>a</sup> Denver,<sup>a</sup> and Glen-

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<sup>a</sup> Denotes location of private sanatoria.



wood Springs; in New Mexico, Alamogordo,<sup>a</sup> Albuquerque,<sup>a</sup> East Las Vegas,<sup>a</sup> Las Vegas, Lincoln,<sup>a</sup> Santa Fe,<sup>a</sup> and Silver City;<sup>a</sup> in Texas, Alpine and Marfa; and in Wyoming, Cheyenne.

At moderate altitudes in the arid Southwest are many localities characterized by all the attributes of a dry climate. During the summer months these places are less comfortable than the more elevated ones just mentioned, but the winter nights are less severe at lower altitudes. Both are about equally subject to the dust storms of this region which occur occasionally, chiefly in March and April. The following places, all at altitudes between 2,000 and 4,315 feet, typify this climate: In Arizona, Castle Creek and Tucson;<sup>a</sup> in New Mexico, Carlsbad, Deming, Las Cruces, and Roswell; in Texas, Boerne, and El Paso.<sup>a</sup>

Warmer, less stimulating, more equable, and more humid, suited (especially as winter resorts) to those less robust and adapted to the needs of some for whom elevated regions are contraindicated, regions of less than 1,000 feet elevation are exemplified in Aiken<sup>a</sup> and Camden, S. C.; Augusta and Thomasville, Ga.; Llano<sup>a</sup> and Columbus, Tex.

As typical of the warm, humid, equable climate should be mentioned Hawaii, certain parts of Florida and the coast of southern California, and as winter resorts and for those with nephritis and advanced fibroid changes, as well as for the aged and cases complicated with excessive bronchial irritability, this type of climate is useful.

No consumptive should start for a health resort without first satisfying himself that he will be able to provide himself with suitable accommodations there. Certain places, notably in Texas, have been filled with indigent cases from the East who have severely taxed the patience and resources of the residents. Generalizations on climate are never of much value and each place must be judged by itself. The National Association for the Study and Prevention of Tuberculosis publishes a directory of institutions for tuberculosis in the United States and Canada, and its official organ, *The Journal of the Outdoor Life*, 2 Rector street, New York, courteously states that its service department "will furnish, without charge, information about sanatoriums, boarding houses, health resorts, and such other data as it has on file."

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<sup>a</sup> Denotes location of private sanatoria.





















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